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Attorney's Docket No. RAL9-99-0110/4269-83 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Hwang et al.
Serial No. 09/430,501
Filed: October 29, 1999
For: **METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR CARRIER DROP DETECTION USING A VARIABLE THRESHOLD**

Confirmation No. 7395
Group Art Unit: 2631
Examiner: Pankaj Kumar

Date: March 5, 2004

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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §1.192

Sir:

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed January 5, 2004.

Real Party In Interest

The real party in interest is IBM Corporation, Research Triangle Park, North Carolina, the assignee of this application.

Related Appeals And Interferences

To Appellants' knowledge, there are no currently pending appeals or interferences related to the present appeal.

Status Of Claims

Appellants appeal the final rejection of Claims 1-6, 9-13, 17-23, 26-33, and 36-37. These claims were rejected in the Official Action of June 27, 2002 ("Office Action"), and in the Final Official Action of August 7, 2003 ("Final Action"). As of the filing date of this brief, Claims 1-37 remain under consideration, with Claims 7, 8, 14-16, 24, 25, 34, and 35 objected to. A copy of the claims as they stand on appeal is attached hereto as Appendix A.

Status of Amendments

The attached Appendix A presents Claims 1-37 as they currently stand. No amendments were submitted that were not entered.

Summary of the Invention

Various modem protocols include startup phases that, in practice, are implemented using carrier drop detection. For example, the V.90 standard begins startup operations with phase 1 procedures, classified as network interaction. The phase 1 network interaction segment of startup operations is followed by the phase 2 operations, classified as channel probing and ranging. At various points in the startup procedures for V.90 and other modem protocols, carrier drop detection may be utilized to transition the client and server modems to subsequent operations. The transitions may include reconfiguration of receivers and/or other related operations. Specification, p. 5, lines 15-23.

The present invention provides methods, systems and computer program products which may reliably detect carrier drop in a modem by utilizing a variable threshold for carrier drop detection. The carrier drop detection threshold is updated based on a recognized data sequence (signal data) contained within the signal received by the modem. The received signal is demodulated to obtain the signal data and an updated threshold is latched when a desired data sequence is recognized in the demodulated data. Accordingly, the threshold may be updated and set as an offset from or a percentage of the carrier signal level at the time of receipt of the desired data sequence. For example, in a V.90 modem using a V.8 phase 1 sequence, receipt of the CM signal (for the answer modem) or the JM signal (for the call modem) may be used to latch an updated level for the carrier drop detection threshold, which may then be used for detecting carrier drop during the silence transmission at the end of phase 1 to allow reliable preparation of the modem for receipt of signals at the start of phase 2. Specification, p. 6, line 17 to p. 7, line 3.

Issues

1. Are Claims 1-6, 9-13, 17-23, 26-33, and 36-37 properly rejected under 35 U.S.C. §102(b) as being unpatentable over United States Patent No. 5,625,643 to Kaku *et al.* (hereinafter "Kaku")?

Grouping of Claims

For appeal, the claims may be grouped together as follows:

Group I: Claims 1-2, 11-13, 18-19, and 28-29.

Group II: Claims 3-6, 9-10, 20-23, 26-27, 30-33 and 36-37.

Group III: Claim 17.

Claims of Group I do not all stand or fall together, as Appellants submit that dependent Claims 2, 19, and 29 are separately patentable. Claims of Group II also do not stand or fall together, as Appellants submit that dependent Claims 6, 23, and 30 are separately patentable.

Argument

I. Introduction

The Group I, II, and III claims of the present application stand rejected as anticipated under 35 U.S.C. § 102(b).

Anticipation requires that each and every element of the claim is found in a single prior art reference. *W. L. Gore & Associates Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). Stated another way, all material elements of a claim must be found in **one** prior art source. *See In re Marshall*, 198 U.S.P.Q. 344 (C.C.P.A 1978). "Anticipation under 35 U.S.C. § 102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention." *Apple Computer Inc. v. Articulate Sys. Inc.*, 57 U.S.P.Q.2d 1057, 1061 (Fed. Cir. 2000). A finding of anticipation further requires that there must be no difference between the claimed invention and the disclosure of the cited reference as viewed by one of ordinary skill in the art. *See Scripps Clinic & Research Foundation v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). In fact, in a recent decision, the Court of Appeals for the Federal Circuit held that a finding of anticipation requires absolute identity for each and every element set forth in the

claimed invention. *See Trintec Indus. Inc. v. Top-U.S.A. Corp.*, 63 U.S.P.Q.2d 1597 (Fed. Cir. 2002). Additionally, the cited prior art reference must be enabling, thereby placing the allegedly disclosed matter in the possession of the public. *In re Brown*, 329 F.2d 1006, 1011, 141 U.S.P.Q. 245, 249 (C.C.P.A. 1964). Thus, the prior art reference must adequately describe the claimed invention so that a person of ordinary skill in the art could make and use the invention.

Appellants submit that the reference cited in the Office Action and the Final Action fails to disclose each and every element of the rejected claims as required by the case law discussed above. The following detailed arguments show that the cited reference does not anticipate any of the Group I, II, or III claims.

II. The Claims Are Patentable Over the Cited Reference

A. The Group I Claims are Patentable over Kaku

Claims 1-2, 11-13, 18-19, and 28-29 of Group I stand rejected under Section 102 as anticipated by Kaku. Appellants submit that Kaku does not disclose or suggest many of the recitations of the Group I claims. Claim 1, for example, recites:

> 1. A method for modem carrier drop detection comprising the steps of:
> demodulating a received signal to provide signal data;
> **updating a carrier drop detection threshold** based on the received signal **responsive to a selected data pattern in the signal data**; and
> detecting a carrier drop based on the carrier drop detection threshold.

Claims 11, 18, and 28, respectively, contain corresponding system, means for, and computer program product recitations. Appellants submit that at least the highlighted recitations of Claim 1 are neither disclosed nor suggested by Kaku, for the reasons set forth below.

Kaku describes a system where a first energy level (threshold L1) is used to detect the presence of a carrier, and a second energy level (threshold L2) is used to detect the absence of a carrier. Kaku, Fig. 9 and Col. 12, lines 16-20. In other words, threshold L1 is a carrier presence detection threshold, while threshold L2 is a carrier drop detection threshold. Furthermore, these thresholds are "determined in advance." Kaku, Col. 12, lines 16-20. Kaku's system compares the power of a received signal with the first predetermined threshold L1 in order to determine carrier presence. Kaku, Col. 12, lines 20-27. If the received signal

power is greater than threshold L1, a carrier is detected. Kaku, Col. 12, lines 27-28. The threshold is then set to the second predetermined threshold L2 in order to determine when a carrier has been dropped. Kaku, Col. 12, lines 30-33.

In contrast to the system of Kaku, embodiments of the present invention as reflected in Claim 1 disclose "**updating a carrier drop detection threshold**". The carrier drop detection threshold of the present invention is established based on the signal strength of the received signal. Specification, p. 10, lines 27-29. This threshold is not determined in advance. Rather, when a new signal is received, the carrier drop detection threshold is updated to a new threshold value based on the newly received signal.

The Office Action states that updating a carrier drop detection threshold is taught by Kaku in Figure 9, steps S1 to S4. Office Action, p.3. Appellants, however, submit that steps S1 to S4 in Figure 9 of Kaku show the transition between a carrier presence detection threshold L1 and a carrier drop detection threshold L2. Kaku does not update the carrier drop detection threshold L2, but merely switches from the carrier drop detection threshold L2 to a different threshold, carrier presence threshold L1. Kaku's carrier drop detection threshold L2 is fixed in value, and remains the same regardless of the received signal. Thus, as the value of L2 is not updated, Kaku does not disclose "updating a carrier drop detection threshold", as recited by Claim 1.

In addition, Claim 1 recites updating the carrier drop detection threshold "**responsive to a selected data pattern in the signal data**" and then detecting a carrier drop based on the updated threshold. In other words, as described in the present specification, embodiments of the present invention "provide for the use of an updated or **relative** carrier drop threshold." Specification, Page 15, lines 8-9 (Emphasis added). Thus, Claim 1 allows for a carrier drop detection threshold that changes in value, relative to a selected data pattern in the received signal. In contrast, Kaku's thresholds are fixed and known in advance. Kaku does not determine the value of each threshold responsive to data patterns in the signal data; rather, Kaku merely switches between threshold L1 and threshold L2 based on the presence or absence of a carrier. As such, Kaku does not disclose updating a carrier drop detection threshold "responsive to a selected data pattern", as recited by Claim 1.

The Office Action nevertheless cites Kaku as disclosing updating the threshold based on a selected data pattern in the received signal. Office Action, p. 3. In particular, the cited portion of Kaku states that "with such a data pattern...the power (energy) obtained at the power calculation section **84** is reduced to zero. In such an instance, the output CDI (carrier) of the carrier detection section **79A** may possibly change over to OFF (carrier absence) before a carrier is actually lost, resulting in a drop of a last portion of the data." Kaku, Col. 13, lines 25-30.

Appellants note that this portion of Kaku merely describes a problem where, because of the filter used in Kaku, certain data patterns may result in a zero power calculation, possibly causing a carrier drop to be detected even though data is still being transmitted. Kaku does not solve this problem by adjusting the carrier drop detection threshold L2 responsive to these certain data patterns. Instead, "a tone signal is added to the last end of a turnoff sequence of transmission data...[so that] the power will not be reduced to zero until transmission of the transmission data is completed." Kaku, Col. 6, lines 31-34. In other words, the tone signal is added to signify the end of a data transmission, so that the threshold may be updated regardless of particular data patterns in the transmission. As such, Kaku actually teaches away from the present invention, which updates the threshold responsive to selected data patterns in the received signal.

Thus, Kaku fails to disclose each and every element of Claim 1, and, in fact, teaches away from "updating a carrier drop detection threshold...responsive to a selected data pattern in the signal data", as recited by Claim 1. Appellants submit that all of the Group I claims are allowable for at least the reasons discussed above regarding Claim 1. Accordingly, the rejections of the Group I claims under Section 102 should be reversed for at least these reasons.

Furthermore, various of the Group I claims are separately patentable. In particular, with reference to Claim 2, Kaku does not disclose updating the carrier drop detection threshold "responsive to a selected data pattern...corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal", as recited by Claim 2.

The Office Action states that Kaku teaches a call menu signal and a joint menu signal because the call menu signal is sent by a call modem and received by an answer modem, and

because the joint menu signal is sent by an answer modem and received by a call modem. Office Action, p. 3. The Final Action further states that "Kaku's fig 7 is updating the threshold...based on the JM or CM signal since fig. 7 is a modem ...and thus it is an [*sic*] call and answer modem depending on its action at a particular time." Final Action, p. 3.

Appellants submit that the system described in Kaku does not appear to contain any recitation of CM and/or JM signals. As such, Appellants presume that the Examiner is inferring that the modem described in Kaku would receive CM and JM signals in use. However, even if the modem disclosed in Kaku's fig. 7 was described as receiving CM and JM signals, **Kaku does not disclose or suggest updating the threshold responsive to a CM and/or JM signal**, as recited by Claim 2. In fact, Kaku does not appear to distinguish any particular received signal as being treated differently with respect to carrier drop detection. Thus, Appellants submit that the recitations of Claim 2 are neither disclosed nor suggested by Kaku. Accordingly, the rejections of Claim 2 and corresponding Claims 19 and 29 should be reversed, as these claims are separately patentable for at least these additional reasons.

B. The Group II Claims are Patentable over Kaku

The Group II claims also stand rejected under Section 102 as anticipated by Kaku. As an initial matter, Appellant submits that the Group II claims are patentable at least for the reasons discussed above with reference to the Group I claims from which they depend.

In addition, Appellants submit that the Group II claims are separately patentable as Kaku does not disclose or suggest many of the recitations of the Group II claims. For example, Claim 3 recites:

> 3. A method according to Claim 1 wherein the updating step further comprises the steps of:
>
> **setting a flag to indicate receipt of at least one of a valid call menu (CM) signal and a valid joint menu (JM) signal;**
>
> **latching an output of a signal strength detector responsive to setting of the flag**, the signal strength detector being coupled to the received signal and the output of the signal strength detector corresponding to a signal strength level of the received signal; and
>
> **setting the carrier drop detection threshold to a value a predetermined amount below the latched output** of the signal strength detector responsive to setting of the flag.

Claims 20 and 30 respectively contain corresponding means for and computer program product recitations. Appellants submit that at least the highlighted recitations of Claim 3 are neither disclosed nor suggested by Kaku, for the reasons set forth below.

The Office Action states that Kaku teaches latching an output responsive to setting of a flag indicating receipt of a CM or JM signal. Office Action, p. 4. However, as discussed above with respect to Claim 2, Kaku does not appear to contain any recitation of CM and/or JM signals. Further, even if it is inferred that the modem described in Kaku does receive CM and/or JM signals during normal operation, **Kaku contains no mention of differentiating CM and/or JM signals from any other parts of the received signal**. Therefore, as understood by Appellants, Kaku does not disclose setting a flag to indicate receipt of a CM or JM signal, as recited by Claim 3. Accordingly, it follows that Kaku also does not disclose latching an output responsive to setting of the flag, as recited by Claim 3.

The Office Action further states that Kaku teaches setting the carrier drop detection threshold to a value a predetermined amount below the latched output. Office Action, p. 4. Referring to Figure 9 of Kaku, the Office Action states that "the latched output of the signal strength detector is P; [threshold level] L2 has to be less than [threshold level] L1 and P since when P>L1 (i.e. P>L1>L2) [the] carrier is on; if L2>P>L1 then the carrier will immediately go from on to off". Office Action, p. 4.

Appellants submit that the Office Action merely states that the carrier drop detection threshold L2 is set to a level that is below the latched output P, not to a **predetermined amount below** P. As discussed above, the value of Kaku's carrier drop detection threshold L2 is fixed and determined in advance, regardless of the received signal. However, the level of the latched output P is not fixed, but changes based on the output of power calculation unit **10a** for each received signal. Kaku, Col. 5, lines 50-64. As such, the amount by which the fixed carrier detection threshold L2 is set below the varying latched output P is not predetermined, but varies with the signal strength of each received signal. Thus, the carrier drop detection threshold of Kaku is not set "a predetermined amount below the latched output", as recited by Claim 3.

Therefore, Kaku fails to disclose each and every element of Claim 3. Appellants submit that all of the Group II claims are allowable for at least the reasons discussed above regarding Claim 3. Accordingly, the rejections of the Group II claims under Section 102 should be reversed for at least these reasons.

Furthermore, various of the Group II claims are separately patentable. For example, Claim 6 recites "setting the carrier drop detection threshold to a level about 4dB below the latched output". As discussed above with respect to Claim 3, Kaku does not teach setting the carrier drop detection threshold a predetermined amount below the latched output. As such, Appellants submit that Kaku also does not disclose setting the carrier drop detection threshold to 4dB below the latched output.

However, the Office Action argues that "[l]acking any criticality, changing the size or range of the prior art parts does not make the claimed invention patentable over that prior art." Office Action, pp. 4-5. The Office Action further specifies the cited range as P>L1>L2. Office Action, p. 5. Appellants submit that this "range" does not specify upper and lower limits for threshold values, but merely specifies the relationship between the threshold levels L1 and L2 and the latched output P. In fact, Kaku fails to disclose any recitation of a range of values for the carrier drop detection threshold L2. The Office Action even concedes that "Kaku...does not specify a 4dB difference". Office Action, p. 5. Thus, Appellants submit that, as Kaku supplies **no** range of threshold values, the recitations of Claim 6 are not merely a change in size or range of the cited portion of Kaku. Accordingly, the rejections of Claim 6 and corresponding Claims 23 and 33 should be reversed, as these claims are also separately patentable for at least these additional reasons.

C. The Group III Claim is Patentable over Kaku

The Group III claim stands rejected under Section 102 as anticipated by Kaku as well. Appellants submit that Kaku does not disclose or suggest many of the recitations of the Group III claim. Claim 17 recites:

> 17. A carrier drop detection system for a V.8 standard modem startup sequence, the system comprising:
> a receiver circuit that receives a signal;

> **a detector circuit coupled to the receiver circuit that detects at least one of a call menu (CM) signal and a joint menu (JM) signal from the received signal;**
> a signal strength detection circuit coupled to the receiver that outputs a received signal strength for the received signal;
> **a threshold circuit** coupled to the receiver circuit **that latches a carrier drop detection threshold** based on a current value of the received signal strength **responsive to detection of at least one of the CM and the JM signal by the receiver circuit**; and
> a comparator circuit coupled to the threshold circuit and the signal strength detection circuit that compares the received signal strength to the carrier drop detection threshold to detect a carrier drop corresponding to an end of the startup sequence.

Appellants submit that at least the highlighted recitations of Claim 17 are neither disclosed nor suggested by Kaku, for the reasons set forth below.

For example, Claim 17 recites "a detector circuit...that detects at least one of a call menu (CM) signal and a joint menu (JM) signal from the received signal". As discussed above with respect to the Group I and II claims, **Kaku contains no mention of differentiating CM and/or JM signals from any other parts of the received signal**. As such, Appellants submit that Kaku does not disclose a detector circuit as recited by Claim 17. Further, as Kaku does not disclose detecting CM and JM signals, Appellants submit that Kaku also does not disclose a threshold circuit that latches a carrier drop detection threshold responsive to detection of at least one of a CM and a JM signal, as recited by Claim 17.

The Final Action states that Claim 17 does not recite "a threshold circuit latching a carrier drop detection threshold." Final Action, p. 2. Instead, the Final Action states that "the receiver circuit can latch a carrier drop detection threshold". Final Action, pp. 2-3. However, Appellants submit that, when read in light of the specification, it is the threshold circuit of Claim 17, and not the receiver circuit, that latches a carrier drop detection threshold. Specification, p. 10. Further, even if not read in light of the specification, Appellants submit that the Final Action's interpretation of Claim 17 is unreasonably broad. In particular, Claim 17 recites "a threshold circuit coupled to the receiver circuit that latches a carrier drop detection threshold...responsive to detection of at least one of the CM and the JM signal **by the receiver circuit**". As such, it would be redundant to include the second recitation of

detection by the receiver circuit unless it was the threshold circuit that latched the carrier drop detection threshold.

Appellants submit that Kaku fails to disclose each and every element of Group III. Accordingly, the rejections of the Group III claim under Section 102 should be reversed for at least these reasons.

III. Conclusion

In light of the above discussion, Appellants submit that each of the pending claims is patentable over the cited references and, therefore, request reversal of the rejections of Claims 1-6, 9-13, 17-23, 26-33, and 36-37.

Respectfully submitted,

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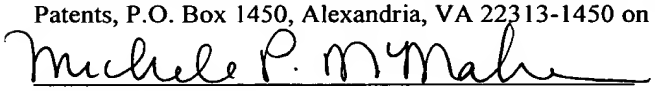

Michele P. McMahan

APPENDIX A
Pending Claims USSN 09/430,501
Filed October 29, 1999

1. A method for modem carrier drop detection comprising the steps of:

demodulating a received signal to provide signal data;

updating a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and

detecting a carrier drop based on the carrier drop detection threshold.

2. A method according to Claim 1 wherein the modem uses a V.8 standard during startup and the step of updating comprises the step of updating the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

3. A method according to Claim 1 wherein the updating step further comprises the steps of:

setting a flag to indicate receipt of at least one of a valid call menu (CM) signal and a valid joint menu (JM) signal;

latching an output of a signal strength detector responsive to setting of the flag, the signal strength detector being coupled to the received signal and the output of the signal strength detector corresponding to a signal strength level of the received signal; and

setting the carrier drop detection threshold to a value a predetermined amount below the latched output of the signal strength detector responsive to setting of the flag.

4. A method according to Claim 3 wherein the signal strength detector is a magnitude detector.

5. A method according to Claim 3 wherein the signal strength detector is an energy detector.

6. A method according to Claim 5 wherein the setting step further comprises the step of setting the carrier drop detection threshold to a level about 4 dB below the latched output of the energy detector responsive to setting of the flag.

7. A method according to Claim 3 wherein the detecting a carrier drop step further comprises the step of detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and wherein the detecting a carrier drop step is followed by the step of conditioning the modem to receive a phase 2 information (INFO0) signal.

8. A method according to Claim 7 wherein the conditioning step further comprises the step of starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

9. A method according to Claim 3 wherein the step of setting a flag further comprises setting a predetermined memory location as the flag.

10. A method according to Claim 3 wherein the step of setting a flag further comprises the step of setting a latch output line to an active state.

11. A carrier drop detection system comprising:

a demodulator that demodulates a received signal to provide signal data;

a threshold circuit coupled to the demodulator that latches a carrier drop detection threshold at a level based on the received signal responsive to a selected data pattern in the signal data; and

a carrier drop detection circuit coupled to the threshold circuit that detects a carrier drop based on the carrier drop detection threshold.

12. A carrier drop detection system according to Claim 11 wherein the demodulator is a frequency shift keyed (FSK) demodulator.

13. A carrier drop detection system according to Claim 12 wherein the carrier drop detection circuit further comprises:

an energy detector having an output corresponding to an energy level of the received signal, the output of the energy detector being latched responsive to the selected data pattern in the signal data; and

a comparator coupled to the output of the energy detector and to the carrier drop detection threshold.

14. A carrier drop detection system according to Claim 13 wherein the threshold circuit further comprises a combiner coupled to the output of the energy detector and an offset that outputs the carrier drop detection threshold as the latched output of the energy detector reduced by the offset.

15. A carrier drop detection system according to Claim 13 wherein the threshold circuit further comprises a multiplier coupled to the output of the energy detector and a coefficient that outputs the carrier drop detection threshold as the latched output of the energy detector multiplied by the coefficient.

16. A carrier detection system according to Claim 14 wherein the selected data pattern in the data signal is at least one of a call menu (CM) signal and a joint menu (JM) signal.

17. A carrier drop detection system for a V.8 standard modem startup sequence, the system comprising:

a receiver circuit that receives a signal;

a detector circuit coupled to the receiver circuit that detects at least one of a call menu (CM) signal and a joint menu (JM) signal from the received signal;

a signal strength detection circuit coupled to the receiver that outputs a received signal strength for the received signal;

a threshold circuit coupled to the receiver circuit that latches a carrier drop detection threshold based on a current value of the received signal strength responsive to detection of at least one of the CM and the JM signal by the receiver circuit; and

a comparator circuit coupled to the threshold circuit and the signal strength detection circuit that compares the received signal strength to the carrier drop detection threshold to detect a carrier drop corresponding to an end of the startup sequence.

18. A carrier drop detection system comprising:

means for demodulating a received signal to provide signal data;

means for updating a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and

means for detecting a carrier drop based on the carrier drop detection threshold.

19. A system according to Claim 18 wherein the modem uses a V.8 standard during startup and the means for updating comprises means for updating the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

20. A system according to Claim 18 wherein the means for updating further comprises:

means for setting a flag to indicate receipt of at least one of a valid call menu (CM) signal and a valid joint menu (JM) signal;

a signal strength detector coupled to the received signal and having an output corresponding to a signal strength level of the received signal;

means for latching an output of the signal strength detector responsive to setting of the flag; and

means for setting the carrier drop detection threshold to a value a predetermined amount below the latched output of the signal strength detector responsive to setting of the flag.

21. A system according to Claim 20 wherein the signal strength detector is a magnitude detector.

22. A system according to Claim 20 wherein the signal strength detector is an energy detector.

23. A system according to Claim 22 wherein the means for setting further comprises means for setting the carrier drop detection threshold to a level about 4 dB below the latched output of the energy detector responsive to setting of the flag.

24. A system according to Claim 20 wherein the means for detecting a carrier drop further comprises means for detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising means for conditioning the modem to receive a phase 2 information (INFO0) signal.

25. A system according to Claim 24 wherein the means for conditioning further comprises means for starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

26. A system according to Claim 20 wherein the means for setting a flag further comprises means for setting a predetermined memory location as the flag.

27. A system according to Claim 20 wherein the means for setting a flag further comprises means for setting a latch output line to an active state.

28. A computer program product for carrier drop detection, comprising:

a computer readable storage medium having computer readable program code means embodied therein, the computer readable code means comprising:

computer readable code which demodulates a received signal to provide signal data;

computer readable code which updates a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and

computer readable code which detects a carrier drop based on the carrier drop detection threshold.

29. A computer program product according to Claim 28 wherein the modem uses a V.8 standard during startup and the computer readable code which updates comprises computer readable code which updates the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

30. A computer program product according to Claim 28 wherein the computer readable code which updates further comprises:

computer readable code which sets a flag to indicate receipt of at least one of a valid CM signal and a valid JM signal;

computer readable code which outputs a signal strength level of the received signal;

computer readable code which latches the output of the computer readable code which outputs a signal strength level responsive to setting of the flag; and

computer readable code which sets the carrier drop detection threshold to a value a predetermined amount below the latched output responsive to setting of the flag.

31. A computer program product according to Claim 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs a magnitude.

32. A computer program product according to Claim 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs an energy level.

33. A computer program product according to Claim 32 wherein the computer readable code which sets further comprises computer readable code which sets the carrier drop detection threshold to a level about 4 dB below the latched output responsive to setting of the flag.

34. A computer program product according to Claim 30 wherein the computer readable code which detects a carrier drop further comprises computer readable code which detects a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising computer readable code which conditions the modem to receive a phase 2 information (INFO0) signal.

35. A computer program product according to Claim 34 wherein the computer readable code which conditions further comprises computer readable code which starts a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

36. A computer program product according to Claim 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a predetermined memory location as the flag.

37. A computer program product according to Claim 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a latch output line to an active state.

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Attorney's Docket No. RAL9-99-0110/4269-83

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Hwang et al.
Serial No. 09/430,501
Filed: October 29, 1999
Confirmation No. 7395
Group Art Unit: 2631
Examiner: Pankaj Kumar
For: **METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR CARRIER DROP DETECTION USING A VARIABLE THRESHOLD**

Date: March 5, 2004

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TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION--37 C.F.R. § 1.192)

1. Transmitted herewith, in triplicate, is the APPEAL BRIEF for the above-identified application, pursuant to the Notice of Appeal filed on January 5, 2004.

2. This application is filed on behalf of
☐ a small entity.

3. Pursuant to 37 C.F.R. § 1.17(c), the fee for filing the Appeal Brief is:

☐	small entity	$165.00
☒	other than small entity	$330.00

Appeal Brief fee due $330.00

☒ The Appeal Brief fee of $330.00 and any additional fee or refund may be charged to Deposit Account 50-0563.

Respectfully submitted,

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